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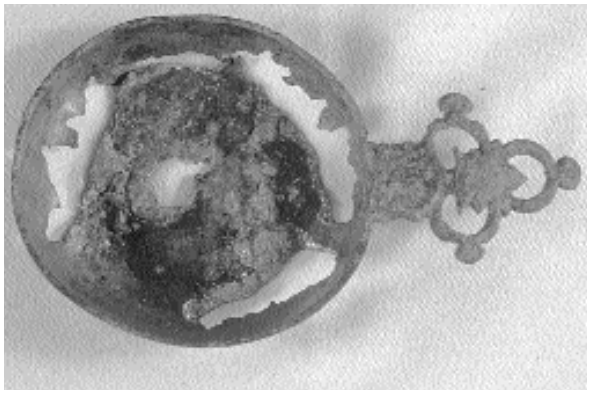
Documenting an Early Cooking Disaster

The Conservation of the Meaux Site Porringer

In the past, archeologists, and others outside the conservation profession, have often viewed archeological conservation as an exercise aimed simply at preserving the morphology of an artifact.[1] This definition has often overlooked the profound contributions that a trained conservator can make to the interpretation, or re-interpretation, of both artifacts and sites. Re-interpretation of an artifact may occur as a function of the condition assessment carried out in the course of deciding on a treatment method, or it may be based on information that becomes obvious during the treatment process, such as evidence of a coating. The conservation of the Meaux site porringer illustrates this process and demonstrates the information that conservation can add to the story of the site as a whole.



Meaux site porringer after treatment with remnant of pewter spoon visible in base. Photo by the author.

In 1991, while the then landowner was landscaping his property, a feature was revealed on the Meaux site, a 17th-century domestic site located on the banks of the Pamunkey River in New Kent County, Virginia. Several artifacts were unearthed, including a metal porringer, which were brought to Colonial Williamsburg for identification. The artifacts were placed on long-term loan to the Colonial Williamsburg Foundation and it was arranged that Colonial Williamsburg's Department of Archeological Research would excavate the feature, and analyze and conserve any artifacts found therein. The feature, excavated over the course of two weeks, proved to be a cellar, containing over 2,000 artifacts, the majority of which dated to between 1680 and 1690.

Historical research, carried out in tandem with the excavation, indicated that John Meaux, the first known owner of the site, and his sister immigrated to Virginia from England sometime prior to 1707. He was granted 200 acres in 1713 and the land remained in his family until the 19th century. The research appears to suggest that the cellar predates Meaux's ownership and was perhaps filled in as a result of his acquisition of the land.

The porringer initially went to the Department of Collections for study and examination and remained there for approximately two years. During this time it was classified as a pewter porringer of a specific type, according to Ronald Michaelis's classification scheme for pewter porringers.[2] This identification was made, despite the thick layer of beige colored clay that covered the artifact, partly on the basis of a small amount of white metal visible in the bowl, partly as a result of the porringer's close conformation to known pewter porringer types, and partly because of a rectangular extension between the body of the porringer and the handle which, although exaggerated, had parallels in other pewter porringers.

By the time conservation began on the porringer, small amounts of dirt covering the object and, in particular, the handle, had been lost and the dirt beneath exhibited a greenish color generally associated with copper corrosion. Although copper corrosion will precede that of either tin or lead, the volume of copper present in 17th-century pewter was rarely higher than 10% and generally less than 3%, an amount that would be unlikely to account for the degree of discoloration seen in the soil.[3] Two small test areas, one on the handle and one in the bowl, were mechanically cleaned. The size of these areas was kept to a minimum as 17th-century pewter could con-

tain up to 26% lead, and it was felt at the time that the lab was not equipped to accommodate the safe cleaning of large amounts of this material by mechanical means. The test area on the handle revealed a tinned metal surface with some indications of a copper substrate, although due to the size of the area it was difficult to make out. Small amounts of fibrous malachite, a corrosion product occasionally seen on cast copper alloy objects, particularly Chinese bronzes, were visible in the dirt overlaying the handle. The test area in the bowl was located near, but not directly adjacent to, a patch of the silvery metal and revealed yet more of the silvery metal. The object was also x-rayed. The x-radiographs showed pools of dense, radio opaque material in the bowl surrounded by areas of medium density material. The walls and handle of the porringer were significantly less dense.

At this point, both curators and conservators were mystified. The handle of the porringer showed signs of being copper alloy, while the bowl appeared to be pewter. Not only was this not a recorded type, but it would also have been hard to construct particularly as the x-ray showed no signs of rivets between the bowl and handle.

With the owner's permission, a small splinter of metal, roughly one millimeter by one millimeter was removed from an area of loss, mounted in a resin block, and polished for metallurgical analysis. Compositional analysis using Energy Dispersive X-ray Fluorescence (EDXRF) was undertaken at the Freer Gallery of Art in Washington, DC, on the sample and the porringer itself. Using EDXRF, primary x-rays are fired at the object/sample, displacing electrons from the inner orbitals of constituent atoms. This leads the elements to gain energy, which is released as secondary or fluorescent x-rays. Elements can then be identified by the wavelengths they produce.

The resin-mounted sample revealed that the white metal seen in the base had melted over and into another metal that appeared to be a copper alloy. The EDXRF analysis of the handle, bowl, and white metal indicated that the porringer was made of brass and that the white metal was pewter. The handle and bowl are of two different alloys (the handle contains approximately 67% copper, 9% zinc, 4% lead, and 15% tin, while the bowl contains 72% copper, 18% zinc, 4% lead and 1% tin).

Based on the evidence at this point it is believed that the most likely scenario for the porringer's current condition is as follows: while it was being used to cook or warm a meal that was being stirred with a pewter spoon, the porringer became red-hot causing the spoon to melt into it. This in turn caused the porringer to become extremely brittle so that even removing it from the fire and placing it gently on the ground would be enough to cause it to shatter. (This is a fairly well known phenomenon known as a "hot short," and the areas of loss in the bowl are in keeping with it.) As the metal cooled, it would have become less brittle preserving a record of the event. The porringer would not, however, have been repairable and as a result was probably discarded at this point.

The story of the porringer has been extremely popular with the "behind-the-scenes" tours that visit Colonial Williamsburg's conservation labs. The visitors are drawn to an object that humanizes the past. Attempts to find parallels to the porringer among brass artifacts revealed that its closest relation was a late-17th-century socket candlestick of probable English origin, which has recently been purchased by Colonial Williamsburg. Not only has our knowledge of the artifact itself been enriched, but also our knowledge of the way in which forms and styles migrated between classes of artifacts has been augmented.

Notes

1 Jessica Johnson, "Conservation and Archaeology in Great Britain and the United States: a Comparison," *Journal of the American Institute for Conservation* 32 (1993): 249-269. Emily Williams, "Sixty-Five years of History: Archaeological Conservation at Colonial Williamsburg," *North American Archaeologis*t 21:2 (2000): 107-113.

2 Ronald Michaelis, "English Pewter Porringer," *Apollo* 7:2 (1976): 116-121.

3 Peter Hornsby, *Pewter of the Western World 1600-1850*. Schiffer Publishing (1983).

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Acknowledgments

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